IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

RESONANT SYSTEMS, INC. d/b/a RevelHMI, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., Defendants.	Case No. 2:22-cv-00423-JRG-RSP **JURY DEMANDED**

PLAINTIFF RESONANT SYSTEMS, INC.'S
<u>REPLY CLAIM CONSTRUCTION BRIEF</u>

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I. INTRODUCTION

As previously explained, Samsung's arguments violate fundamental principles of claim construction. In its opposition, Samsung fails to provide legal or factual justifications for its proposals, which construe terms unnecessarily, limit terms without lexicography or disclaimer, and, in some cases, directly contradict intrinsic evidence. Samsung's proposals should be rejected.

II. LEVEL OF ORDINARY SKILL IN THE ART

Samsung does not dispute that the asserted patents relate to electro-mechanical control systems but argues that experience in "electronic consumer product design" would be sufficient. Dkt. No. 74 at 1-2. It is unclear how experience designing an LCD display or a calculator, among other electronic consumer products, would qualify someone to address the electro-mechanical vibration technologies at issue here. RevelHMI's proposal better targets the relevant field.

III. DISPUTED CLAIM TERMS

A. "vibration module" ('081 and '830 patents, claims 1-8, 17)

Samsung acknowledges that neither lexicography nor disclaimer applies. Dkt. No. 74 at 3. Yet Samsung argues its 20-word construction should still be adopted because the specification says that vibration modules "***can*** be incorporated" into other devices.[1] '081 patent at Abstract. A mere description of how vibration modules can be used in practice, even in a disclosed embodiment, does not limit claim scope. *JVW Enters., Inc. v. Interact Accessories*, 424 F.3d 1324, 1335 (Fed. Cir. 2005) (without clear and unambiguous disclaimer or lexicography, courts "do not import limitations into claims from examples or embodiments appearing only in a patent's written description, even when a specification describes very specific embodiments of the invention or even describes only a single embodiment"). Nor do Samsung's dictionary definitions warrant

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[1] All emphasis in quoted material has been added unless otherwise noted.

construction of this readily understood phrase. *See, e.g.*, Hooper Decl. ¶¶ 26-28; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862-63 (Fed. Cir. 2004) (explaining the offered "dictionary definitions are largely unhelpful" and "question[ing] the need to consult a dictionary to determine the meaning of such well-known terms").

B. **"frequency" ('081 and '830 patents, claims 1, 2, 5, 6, 17)**

Samsung's opposition largely ignores the criticisms raised by RevelHMI. For example, RevelHMI asserted that, "[a]s Samsung's expert acknowledges, the plain meaning of 'frequency' is broader than Samsung's proposal and can refer, for example, to how often an event (not just oscillation) occurs. *E.g.*, Forlines Tr. at 41:18-42:8 ('I think the word "frequency" can have other meanings. You might speak about the frequency in which you visit your parents ….')." Dkt. No. 69 at 4. Samsung neither disputes this nor argues that any lexicography or disclaimer applies.

As another example, RevelHMI pointed out that Samsung's proposal "does not even come from the specification" and does not "use language that would be more easily understood by a jury" than the simple word "frequency." *Id.* Samsung offers no response, apparently agreeing that a jury would more likely be confused by the term "oscillation" than "frequency."

Indeed, even when Samsung purports to rebut RevelHMI, it often does not actually do so. For example, RevelHMI pointed out that none of Samsung's three dictionary definitions "includes the phrase 'rate of oscillation' or even the word 'rate,' and only one includes a variant of the word 'oscillation.'" *Id.* at 5. While Samsung asserts this is "incorrect," its only rebuttal is that—just as RevelHMI said—one of the three includes a variant of the word "oscillation." Dkt. No. 74 at 6.

More critically, though, Samsung still fails to account for the specification using "frequency" to refer to how frequently the direction of current is changed. *E.g.*, '081 patent at 5:43-45. Samsung attempts to hand-wave this by arguing that this frequency of current direction changing "***determines*** the rate of oscillation," but Samsung's insertion of "determines" here is

telling, in that it recognizes the frequency is not itself the rate of oscillation of the moving mass.

C. Typographical error in claim 4 ('081 and '830 patents, claims 4, 5, 6)

It is objectively true that it would be easier for a patent claim drafter to mistakenly type a "1" instead of a "3" than it would be to mistakenly add three new phrases into a claim, each preceded by the definite article "the" but without any antecedent basis. Samsung dismisses this simple fact as "pure speculation." Dkt. No. 74 at 9. It is not speculative at all—one errant keystroke (mistyping one numeral for another) is more likely to happen than a patent drafter mistakenly inserting three new limitations (and the word "the" in three separate places) without antecedent basis for any of them. Because one mistyped numeral is far more likely than three mistakenly added clauses (each preceded with a mistakenly added "the"), the two corrections identified by Samsung clearly are not "equally plausible." *See* Dkt. No. 74 at 7. Samsung's failure to respond meaningfully to this is telling, as its entire indefiniteness argument rests upon this flawed premise.

Furthermore, Samsung ignores that the error occurs in claim 4, a natural place to refer back to the immediately preceding claim 3. It is not coincidental that claim 3 undisputedly provides perfect antecedent basis for the challenged phrases of claim 4, the very next claim. This further shows that Samsung's position is not credible and that there is no "reasonable debate."

Neither Samsung nor its expert give any plausible explanation how a patent drafter would have accidentally added the word "the" three separate times, beyond vaguely suggesting that it "could be explained by a copy-paste error" of "[p]erhaps copying and pasting, you know, these, you know, phrases with an antecedent basis, you know, from elsewhere, you know, in, you know, errors in drafting where, you know, we get used to, you know, certain phrases and whatnot as we're typing." Forlines Tr., 29:16-30:5. This is not a credible explanation.

According to Samsung, "[t]he specification arguably supports both possible interpretations as it does not limit the location of 'sensors' to just to [sic] those '**within** the [linear] vibration

module.'" Dkt. No. 74 at 8 (emphasis in original). The absence of an explicit contrary teaching is not "support" for Samsung's baseless Correction 1, and Samsung cannot dispute that the specification discloses sensors within the vibration module even if it does not explicitly say that is the only possible configuration. *E.g.*, 081 patent at 6:9-29, Fig. 6 (sensor 632 within LRVM 600).

Nor does Samsung's Correction 1 even make grammatical sense. Specifically, Samsung's Correction 1 would recite "in order that subsequent operation of ~~the~~ [linear] vibration module produces desired outputs." Dkt. No. 74 at 7. That phrase needs an article before the word "vibration" (or "linear" in the case of the '081 patent), which is why the claim as written includes the word "the." Samsung's strained interpretation of claim 4 thus defies not only basic logic but also basic grammar. Again, this shows Samsung is not credible.

RevelHMI respectfully requests that the Court correct claim 4 to recite "of claim 3."[2]

D. "wherein the one or more operational control outputs is a control output that determines …" ('081 and '830 patents, claim 6)

The plain language of claim 6 does not require that the control output is a frequency. Samsung's construction is based on the false premise that "claim 6 is ambiguous." Dkt. No. 74 at 10. It is not. Indeed, it would not make grammatical sense to require two separate control outputs because the claim recites "is **a** control output" before reciting that this control output determines current and frequency. While that is already sufficiently clear to end the inquiry, Samsung's proposed insertion of "is" makes clear that the claim language is not ambiguous. If it were, then there would be no need for Samsung to add the word "is." In other words, Samsung falsely assumes ambiguity where there is none to justify a rewording of the claim language. This is improper.

E. "tube" ('081 and '830 patents, claim 8)

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[2] RevelHMI maintains the claims are not indefinite even without correction. Dkt. No. 69 at 8 n.3.

The term "tube" is not limited to cylinders. As Dr. Hooper explains, "[t]he scope of 'tube' is not defined by cross-section but by other familiar properties known to both a POSITA and the jury, such as by being hollow and relatively narrow." Hooper Decl. ¶ 41. Of course, many tubes are cylindrical in shape, but that is not a basis for limiting this claim term to particular examples.

Samsung erroneously asserts that the specification "use[s] the terms 'tube' and 'cylindrical housing' interchangeably." Dkt. No. 74 at 11. Not so. The specification uses the two phrases with "or" between them. That is not interchangeable use, and the cases cited by Samsung—*Wasica*, *Saffran*, or *Bid for Position*—did not involve two terms separated by "or" that were called interchangeable. Absent lexicography or disclaimer—which Samsung cannot even allege here— RevelHMI is entitled to the full plain and ordinary meaning of "tube," without the claim term it chose being limited to a different and narrower term from the specification (i.e., "cylindrical housing"). *See JVW Enters.*, 424 F.3d at 1335.

As RevelHMI showed in its opening brief, consumers can readily buy both cylindrical tubes and non-cylindrical tubes. Dkt. No. 69 at 10-11. Samsung brushes off such evidence as irrelevant because it comes from a current website, as though the meaning of "tube" has somehow changed dramatically over the last decade. *See* Dkt. No. 74 at 12-13. Samsung similarly tries to characterize such evidence as irrelevant because a metal tube sold on a website is somehow "outside the Asserted Patents' field," in that the tube could be used for a construction project if desired. Such irrelevant criticisms further show that Samsung's position is not credible.

F.   **"moveable component" ('081 and '830 patents, claims 1, 2, 5-7, 17)**

The word "moveable" is an adjective, not a function—and only functional claim language falls within the purview of 35 U.S.C. § 112 ¶ 6. Notably, Samsung offers no rebuttal to RevelHMI's discussion of this District's *Nanology* opinion, which found that § 112 ¶ 6 did not apply to the highly similar term "moving mechanism." *See* Dkt. No. 69 at 13 (citing *Nanology Alpha LLC v.*

WITec Wissenschaftliche Instrumente und Technologie GmbH, No. 6:16-CV-00445-RWS, 2017 WL 5905272, at *10 (E.D. Tex. Nov. 30, 2017)). As in that case, the claim language and specification make clear how the moveable component interacts with other recited structural elements. *Id.* (citing '081 patent at cls. 1, 2, 5-7, 17, Figs. 4A-4G, 10-18, 24A-24B, 25, and corresponding text). Samsung offers no response.

G. "driving component …" ('081 and '830 patents, claim 1)

Samsung curiously argues that "Plaintiff does not identify an embodiment of a non-coil electromagnet," while acknowledging that the specification explicitly refers to "electromagnets" without limiting that disclosure to electromagnetic coils. Dkt. No. 74 at 16. The specification need not say "non-coil electromagnet" for that to fall within the scope of the claims. The specification discloses electromagnets without any limiter on whether they are coils or not. That is enough.

Samsung's claim differentiation arguments are similarly erroneous. Samsung first mischaracterizes RevelHMI's argument as being that § 112 ¶ 6 does not apply at all, such that Samsung's reliance upon *Laitram* is irrelevant. Second, Samsung argues that its claim 1 proposal of "one or more electromagnetic coils" does not render superfluous claim 8's recitation of "an electromagnetic coil," but Samsung forgets that "an" is presumed to mean "one or more" in claim construction. *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000).

H. "control component that controls supply …" ('081 and '830 patents, claim 1)

1. An oscillator circuit is sufficient structure and requires no algorithm.

Samsung acknowledges the specification discloses an oscillator circuit but argues it "is not disclosed to be capable of controlling the amplitude of vibration." Dkt. No. 74 at 19. That is wrong:

> In one example implementation of an **oscillator-controlled linear vibration module,** a variable-frequency **oscillator circuit** can be controlled by user input to drive the H switch or other H-switch-like circuit to operate the linear vibration module at **different frequencies**. A user is provided an input feature that allows the user to directly adjust the frequency of the variable oscillator and thus the vibrational

frequency produced by the linear vibration module. The user is additionally provided with an input feature to allow the user to control the current or duty cycle used to drive the linear vibration module and to thus **increase and decrease the amplitude of vibration** produced by the linear vibration module. Thus, a **user can control both the frequency of vibration and the amplitude of vibration**.

'081 patent at 11:59-12:5. Samsung attempts to explain this away by arguing that "amplitude is separately controlled by an 'input feature'—not the oscillator circuit." Dkt. No. 74 at 19. That argument contradicts Samsung's own recognition that the oscillator controls frequency. As shown above, the specification states that the user "is provided an input feature that allows the user to directly adjust the frequency" and similarly states that the user is "provided with an input feature to allow the user to control the current or duty cycle used to drive the linear vibration module and to thus increase and decrease the amplitude of vibration." '081 patent at 11:59-12:5. Samsung cannot argue that the "input feature" phrase means the oscillator circuit *cannot* control amplitude while maintaining that the same phrase means that the oscillator circuit *can* control frequency.

Samsung's response regarding claim 2 is no more persuasive, as the "additional control circuitry" Samsung refers to are the input features referenced above, which the specification describes as being used to "adjust the frequency" and "control the current or duty cycle … to thus increase and decrease the amplitude." '081 patent at 11:59-12:5. These features are linked to the claimed function, and RevelHMI would not oppose the Court modifying its identified structure of "oscillator circuit" to read "oscillator circuit with input features" or similar, if the Court is inclined.

Notably, Samsung also offers no defense of Dr. Forlines's concession that amplitude could still be controlled in an embodiment where, as the specification explicitly describes ('081 patent at 11:43-47), the microprocessor is replaced with an oscillator circuit. Forlines Tr. at 71:21-72:19.

2. RevelHMI's algorithm is sufficient for the claimed function.

Samsung's algorithm recites an unnecessary third step in which the processor "provide[s] a corresponding output to the driving component." Because Samsung's step (3) is not required to

perform the claimed function, it must be excluded from the Court's construction. *Univ. of Pitt. of Commonwealth Sys. of Higher Educ. v. Varian Med. Sys., Inc.*, 561 F. App'x 934, 941 (Fed. Cir. 2014); *Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1352 (Fed. Cir. 2003).[3]

As shown below, RevelHMI's step (b) more closely tracks the specification than Samsung's steps (2) and (3), demonstrating that Samsung's third step is unnecessary.

Specification	RevelHMI	Samsung
"outputs the value p to the power supply **so that the power supply outputs** an appropriate current to the coil" ('081 patent at 8:16-20)	(b) provide a corresponding output to the power supply **so that the power supply provides** a corresponding output to the driving component	(2) provide a corresponding output to the power supply, **and** (3) provide a corresponding output to the driving component

And again, Samsung's proposal here is inconsistent with its own proposal in IPR proceedings, where Samsung proposed a processor <u>and H-bridge switch</u> programmed with an algorithm, and where step (3) of its algorithm was "provide a corresponding output to the <u>H-bridge switch</u>" rather than "provide a corresponding output to the driving component," as Samsung proposes here. *E.g.*, Ex. 10 ('081 IPR Petition) at 7. Samsung argues that it "needed to ensure against the possibility that the Board found [the H-bridge switch] was required," but this defense makes little sense given that it was Samsung who affirmatively ***advocated for*** its inclusion. *Id.*

If the Court were to agree with Samsung that three steps are necessary for the claimed function, the Court should adopt RevelHMI's alternative proposed algorithm, which matches what Samsung proposed in its IPR petitions. *Id.* Samsung offers no reason why that algorithm would not be appropriate here. Instead, Samsung states only that the H-bridge is not necessary. But if Samsung's IPR step (3) was unnecessary, then it follows that its proposed step (3) here is likewise unnecessary, as RevelHMI has pointed out. In any event, Samsung's IPR proposal is at least more

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[3] Samsung offers no defense for its function using "represented by" rather than "representing." *See* Dkt. No. 69 at 19 (§ IV.H.3). As previously explained, RevelHMI's proposal should be adopted.

consistent with the specification than Samsung's proposal here. *E.g.*, '081 patent at 6:31-33 ("The H-bridge switch 620 receives a control-signal input d 622 from the CPU."), Fig. 6.

I. "wherein the control component receives output signals from sensors …" ('081 and '830 patents, claim 3)

Samsung does not dispute that non-integers can be compared. Nor can Samsung dispute that receiving an output signal, storing its value in a variable, and comparing that variable to a value is sufficient for performing the claimed function. Integer conversion is an unnecessary step that must be excluded. *Univ. of Pitt.*, 561 F. App'x at 941; *Northrop Grumman*, 325 F.3d at 1352.

Samsung's purported basis for requiring an integer conversion step is that Figure 7B discloses integer conversion. Dkt. No. 74 at 14. But the law does not require every detail disclosed in a patent specification to be incorporated into a corresponding algorithm under § 112 ¶ 6—only those steps which are ***necessary*** to perform the claimed function. Here, the parties agree that the claimed function specifies nothing about integers, showing integer conversion is unnecessary.

Samsung also argues that RevelHMI's recitation of "receive the value of an output signal" does not match the function of "receiving output signals." Dkt. No. 74 at 25. RevelHMI disagrees that there is any inconsistency. However, if the Court believes it would add clarity, RevelHMI would not oppose modifying its algorithm so that it begins "(a) receive ~~the value of~~ an output signal; (b) compare ~~that value~~ the value of that output signal to a different value …."

J. "wherein the control component adjusts …" ('081 and '830 patents, claim 4)

For the same reasons as for claim 3, RevelHMI's proposal for claim 4 should be adopted.

K. "wherein the one or more operational control parameters is a strength …" ('081 and '830 patents, claim 5)[4]

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[4] Samsung briefly attempts to explain away its failure to even argue in IPR that claim 5 is subject to § 112 ¶ 6 by arguing that "an IPR petition cannot assert indefiniteness." *See* Dkt. No. 74 at 30. That point is irrelevant because Samsung does not argue here that claim 5 is indefinite.

Samsung begins with a straw-man attack, misrepresenting RevelHMI's argument as being that ***no*** wherein clause could ever be included in a claimed function under § 112 ¶ 6. Dkt. No. 74 at 27. Of course, RevelHMI's actual argument was that the two wherein clauses at issue ***here*** do not recite any function and should therefore be omitted from the Court's construction. Instead, they merely reference parameters and outputs, failing to recite any function for the claimed control component to perform. Of the several cases Samsung cites for the unremarkable proposition that a wherein clause ***can*** recite a function, the only one it even discusses is *Finesse Wireless*. *Id.* But in that case, the plaintiff argued that "the 'wherein' clause recite[d] sufficient additional structure to uphold the presumption" that § 112 ¶ 6 did not apply, and this Court rejected that argument because the wherein clause did not recite any structure related to the alleged nonce term. *Finesse Wireless LLC v. AT&T Mobility LLC*, No. 2:21-CV-00316-JRG, 2022 WL 3686478, at *10 (E.D. Tex. Aug. 24, 2022). Those are very different from the facts here, where RevelHMI's point is that the wherein clauses do not recite function, not that § 112 ¶ 6 is inapplicable.

As with claim 3, Samsung also seeks to add unnecessary steps in its corresponding algorithm. But again, the law does not require every specification detail to be incorporated into the corresponding algorithm under § 112 ¶ 6—only those steps which are ***necessary*** to perform the claimed function. Samsung's prefatory steps (1) and (2) are simply not necessary and should be excluded. *Univ. of Pitt.*, 561 F. App'x at 941; *Northrop Grumman*, 325 F.3d at 1352.

L. **"wherein the one or more operational …" ('081 and '830 patents, claim 6)**

Claim 6 likewise adds no functional limitation beyond that recited in claim 4. Instead, claim 6 merely limits what the previously recited parameters and outputs can be—without modifying or adding to the function of claim 4. Thus, § 112 ¶ 6 does not apply to claim 6. And in any event, the specification discloses structure for performing the function identified by Samsung, namely the same structures described above with respect to claims 1 and 4. *See supra* §§ III.H, III.J.

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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served on January 25, 2024, with a copy of this document via the Court's CM/ECF.

/s/ Reza Mirzaie
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